

Attny. Docket No.: 2003-0395/N1085-90166

**REMARKS**

1. Claims 1-28 were pending in the application. Of these claims, claims 1-10 stand rejected and claims 11-28 stand withdrawn. This paper amends claims 9 and 10; cancels claims 1-8 and 11-28; and adds claims 29-34.

Reconsideration of this application is respectfully requested.

2. Withdrawn claims 11-28 are cancelled herein without prejudice or disclaimer of the subject matter contained therein. The applicants reserve the right to refile claims 11-28 in a divisional application.

3. Claim 2 stands rejected under 35 U.S.C. 112, second paragraph because it contains trademarks/trade names.

In response, claim 2 has been cancelled. Accordingly, withdrawal of this rejection is respectfully requested.

4. Claims 1-10 stand rejected under 35 U.S.C. 102(e) as being clearly anticipated U.S. Patent 6,541,397 B1 to Bencher.

In response, claim 1 has been cancelled and replaced with claim 29 which requires among other elements: "flowing oxygen, argon, and an organosilane selected from the group consisting of dimethylsilane, trimethylsilane, and tetramethylsilane, over the substrate at a flow rate ratio of about 1:1.5:6". The flow rate ratio of about 1:1.5:6 was recited in original claim 7.

Contrary to the examiner's assertion, Bencher fails to expressly or inherently describe the claimed flow rate ratio. Although the examiner relies on column 5, lines 45-55 of Bencher for the flow rate ratio of about 1:1.5:6, Bencher states therein:

A preferred silicon, oxygen, and carbon layer is deposited in one embodiment by supplying trimethylsilane or 1,3,5,7-tetramethylcyclotetrasiloxane to a plasma processing chamber at a flow rate between about 10 and about 1000 standard cubic centimeters per minute (sccm) with an oxidizing gas supplied to

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the processing chamber at a flow rate between about 10 sccm and about 1000 sccm. An inert gas, such as helium, argon, or combinations thereof, is also supplied to the chamber at a flow rate between about 50 sccm and about 5000 sccm. The chamber pressure is maintained between about 100 milliTorr and about 15 Torr. The substrate surface temperature is maintained between about 100° C. and about 450° C. during the deposition process.

As can be seen, column 5, lines 45-55 of Bencher does not expressly or inherently describe the flow rate ratio of about 1:1.5:6, as presently claimed in new claim 29. In addition, no other portion or disclosure of Bencher expressly or inherently describes the flow rate ratio of about 1:1.5:6. Accordingly, claim 29 is allowable.

Original dependent claims 3, 4, 6 and 8 have been respectively replaced by new dependent claims 30-33, which have been drafted to be consistent with new independent claim 29, from which they depend. Applicant believes that claims 30-33 are allowable for at least the same reasons as stated for claim 29.

Further, claim 33 additionally requires: "the carbon doped SiO<sub>2</sub> film is deposited to a thickness of about 4000 to 8000 Angstroms". The examiner asserts that column 9, lines 60-65 of Bencher describes the acceptable thickness is from 4000 to 8000 Angstroms. Bencher merely states in column 9, lines 60-65:

The first dielectric layer 112 of interlayer dielectric material is deposited on the first silicon carbide barrier layer 110 by oxidizing an organosilane or organosiloxane, such as trimethylsilane, to a thickness of about 5,000 to about 15,000 Å, depending on the size of the structure to be fabricated. (Emphasis added.)

An example of a low dielectric constant material that may be used as an interlayer dielectric material is Black Diamond

As can be seen, the claimed thickness range is clearly different from the thickness range described by Bencher. Accordingly, claim 33 is allowable over Bencher for this reason also.

With respect to claims 9 and 10, which now depend upon claim 29 and recite additional features of the invention, applicant believes these claims to be allowable for at least the same reasons as stated for claim 29.

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Further, claim 10 additionally requires: "the deposition rate of said carbon doped SiO<sub>2</sub> film is from about 5000 to 8000 Angstroms per minute". The examiner asserts that column 8, lines 10-20 of Bencher describes this feature. Bencher merely states in column 8, lines 10-20:

The amorphous carbon layer is then deposited from the processing gas using the following deposition process parameters. The substrate is maintained at a substrate temperature between about 100° C. and about 500° C., a chamber pressure is maintained between about 1 Torr and about 20 Torr, the hydrocarbon gas (C<sub>x</sub>H<sub>y</sub>) has a flow rate between about 50 sccm and about 500 sccm for a 200 mm substrate, a plasma is generated by applying a RF power of between about 3 W/cm<sup>2</sup> and about 20 W/cm<sup>2</sup>, or between about 1000 watts (w) and about 6000 W for a 200 mm substrate, with a gas distributor being between about 300 mils and about 600 mils from the substrate surface. The above process parameters provide a typical deposition rate for the amorphous carbon layer in the range of about 100 Å/min to about 1000 Å/min... (Emphasis added.)

As can be seen, the claimed deposition rate range is clearly outside the deposition rate range described by Bencher. Accordingly, claim 10 is allowable over Bencher for this reason also.

In view of the foregoing, withdrawal of this rejection is respectfully requested.

5. New independent claim 34, among other elements, recites: "wherein the deposition rate of the carbon doped SiO<sub>2</sub> film is from about 5000 to 8000 Angstroms per minute." As discussed above, Bencher describes a much different deposition rate of about 100 Angstroms per minute to about 1000 Angstroms per minute. Accordingly, claim 34 is allowable over Bencher.

6. Favorable reconsideration of this application is respectfully requested as it is believed that all outstanding issues have been addressed herein and, further, that claims 9, 10, and 29-34 are in condition for allowance. Should there be any questions or matters whose resolution may be advanced by a telephone call, the examiner is cordially invited to contact applicants' undersigned attorney at his number listed below.

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7. The Commissioner is hereby authorized to charge payment of any additional filing fees required under 37 CFR 1.16 and any patent application processing fees under 37 CFR 1.17, which are associated with this communication, or credit any overpayment to Deposit Account No. 50-2061.

Respectfully submitted,



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